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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/808,312	03/14/2001	Sabine Deligne	YOR20010010US1	3073

35195 7590 02/02/2005

FERENCE & ASSOCIATES
400 BROAD STREET
PITTSBURGH, PA 15143

EXAMINER	
OPSASNICK, MICHAEL N	
ART UNIT	**PAPER NUMBER**
2655	

DATE MAILED: 02/02/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	09/808,312	DELIGNE ET AL.	
	Examiner	Art Unit	
	Michael N. Opsasnick	2655	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *27 December 2004*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-17* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-17* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

1a. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on 12/27/2004 has been entered.

Allowable Subject Matter

1b. Claims 8 and 16 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

2. The following is a statement of reasons for the indication of allowable subject matter:

With respect to claims 8 and 16, Weinstein et al discloses a first input medium that is adapted to obtain the initial speech signal in an environment where noise corresponding to at least one interfering signal is present. Weinstein et al describes that the first signal detects the speech signal with some noise and the second signal, the interfering signal, consists of noise and some speech signal where the coupling of the signals are dues to the unknown acoustic room environment (col. 5, lines 26-29). The Weinstein reference does not disclose or teach that the normalizing arrangement is adapted to apply a compensation term via assessing its expectation value over a plurality of codeword in the codebook.

Claim Rejections - 35 USC § 102

3. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

4. Claims 1-4,9-12, and 17 are rejected under 35 U.S.C. 102(b) as being anticipated by Flanagan et al (5737485).

As per claims 1,9, and 17, Flanagan et al (5737485) discloses an apparatus, program, and method for compensating for interference in a speech recognition system comprising of a first input medium which obtain an initial speech signal, a second input medium which obtains at least one interfering signal, wherein said on interfering signal not be statistically independent of said initial speech signal (Flanagan et al (5737485) teaches extracting features from speech, separated from environment noise – col. 3 lines 65), a normalizing arrangement (as compensating for the environmental variations – col. 3 line 65 – col. 4 line 4) which reconciles the initial speech signal and at least one interfering signal with one another to produce a final speech signal and the normalizing arrangement being adapted to account for non-stationary noise in at least one interfering signal (and normalization with the other signals within the microphone array to separate the noise -- col. 5 lines 5-27).

As per claims 2&10, Flanagan et al (5737485) discloses a first input medium that is adapted to obtain the initial speech signal in an environment where noise corresponding to at least one interfering signal is present and said noise need not be linearly time invariant couple to said initial speech signal. (Flanagan et al (5737485) describes that the first signal detects the speech signal with some noise and the second signal, the interfering signal, consisting of noise and some speech signal where the coupling of the signals are due to the unknown acoustic room environment – col. 4 line 40 – col. 5 line 25).

As per claims 3 & 11, Flanagan et al (5737485) discloses that the second medium is adapted to obtain solely that at least one interfering signal. (col. 3 line 60 – col. 4 line 5).

As per claims 4 & 12, Flanagan et al (5737485) discloses that the final speech signal is a clean speech signal. Flanagan et al (5737485) discloses that the processor of the invention is responsible for reconstructing the desired speech signal "without the interfering signal" which implies a clean speech signal (fig. 13, the corrected cepstrum coefficients).

Claim Rejections - 35 USC § 103

5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

6. Claims 5 & 13 are rejected under 35 U.S.C. 103(a) as being unpatentable over Flanagan et al (5737485) in view of Beierle (5309378).

As per claims 5 & 13, Flanagan et al (5737485) discloses an apparatus for compensating for interference in speech recognition system comprising of a first input medium which obtains an initial speech signal, a second input medium which obtains at least one interfering signal, a normalizing arrangement (Flanagan et al (5737485) describes that the first signal detects the speech signal with some noise and the second signal, the interfering signal, consisting of noise and some speech signal where the coupling of the signals are due to the unknown acoustic room environment – col. 4 line 40 – col. 5 line 25) which reconciles the initial speech signal and at least one interfering signal with one another to produce a final speech signal and the normalizing arrangement being adapted to account for non-stationary noise in at least one interfering signal.

Flanagan et al (5737485) does not disclose a normalizing arrangement adapted to estimate at least one characteristic from the reference signals given at least one characteristic of the initial speech signal. However, Beierle (5309378) teaches a signal

conditioning device that amplifies, samples and digitizes the signal characteristics of the reference (interfering signal) as well as the speech signal *[Beierle describes that the primary and reference signal are coupled and that the adaptive canceller reduces the reference noise signals from the primary signal in order to increase the signal to noise ratio of the primary signal]* (Fig. 1(30); Col. 5, Line 38 - 50). The extraction of signal characteristics of the reference and signal is beneficial to some signal enhancement algorithms that perform continuous real-time noise cancellation. Therefore, it would have been obvious to one of ordinary skill at the time of the invention to modify Flanagan et al (5737485) by the utilization of characteristics of both the reference and signal as taught by Beierle (5309378) since it is would have been beneficial for noise cancellation in speech signals (col. 5 lines 30-37).

7. Claims 6 & 14 are rejected under 35 U.S.C. 103(a) as being unpatentable over the combination of Flanagan et al (5737485) and Beierle (5309378) as applied to claims 5 & 13,above, and further in view of Sonmez et al. (U.S. Patent 5745872).

As per claims 6 & 14, the modified Flanagan et al (5737485) discloses an apparatus/method for compensating for interference in speech recognition system. In addition, a signal-conditioning device is also presented that processes the signal characteristics. Also, the modified Flanagan et al (5737485) addresses the issue of removing noise from the desired signal (Beierle, Col 5, Lines 30 - 35). However, the modified Flanagan et al (5737485) does not disclose that the normalizing arrangement is adapted to refer to a single codebook in estimating the signal at least one characteristic. However, Sonmez et al. teach the use of single codebook referring to a signal

characteristic for use in a normalizing arrangement (Title, Fig. 1, Col 4, 27 - 40; Col 3, Line 25 - 45) *[Sonmez describes codebook(s) for at least one signal characteristic].* Codebook vectors are used as a means of classifying speech features such as the spectra information. The classification of both static and dynamic features in a noisy environment is an asset in boosting speech recognition performance. Therefore, it would have been obvious to one of ordinary skill at the time of the invention to modify the modified Weinstein et al. by the utilization of single codebook to refer to at least in estimating at least one characteristic of the reference signal as taught by Sonmez since it is would have been beneficial to the normalizing arrangement resulting in improved speech recognition (Sonmez, col. 2 lines 30-35).

8. Claims 7 & 15 are rejected under 35 U.S.C. 103(a) as being unpatentable over the combination of Flanagan et al (5737485), Beierle (5309378) and Sonmez et al. (U.S. Patent 5745872) as applied to claims 5 & 13 above, and further in view of Ammar et al. (Seventh National Radio Science Conference).

As per claims 7 & 15, the modified Flanagan et al (5737485) disclose an apparatus/method for compensating for interference in speech recognition system. In addition, a signal-conditioning device is also presented that processes the signal characteristics. The modified Flanagan et al (5737485) also disclose that the normalizing arrangement is adapted to refer to a codebook in estimating the signal characteristics. However, the modified Flanagan et al (5737485) do not disclose that the normalizing arrange applies a compensation term to the initial speech. However, Ammar et al.

disclose the use of a compensation term *[as claimed]* to enhance the initial speech (Fig. 1). Many algorithms in speech enhancement use a compensation term on the initial speech as a means of adaptively suppressing the interference signals. Therefore, it would have been obvious to one of ordinary skill at the time of the invention to modify the modified Flanagan et al (5737485) by the use of a compensation term on the initial speech as taught by Ammar et al. since it is enhanced the initial speech resulting in improved speech recognition (summary).

Response to Arguments

9. Applicant's arguments with respect to claims 1,9,17 have been considered but are moot in view of the new ground(s) of rejection.

As per the arguments with respect to claims 5 and 13 with respect to a computation term, examiner argues that 1) this feature is not recited in the rejected claim(s). Although the claims are interpreted in light of the specification, limitations from the specification are not read into the claims. See *In re Van Geuns*, 988 F.2d 1181, 26 USPQ2d 1057 (Fed. Cir. 1993). Furthermore, applicant admits that the Beirle reference teaches adjustment of the input and reference signals.

As per the arguments with respect to claims 6 and 14, examiner argues that Somnez teaches a single codebook (singular codebook generation → col. 3 lines 25-45; a single codebook for the reference environment). Furthermore, Somnez teaches that thru the adaptation to an unknown environment, unwanted signals are removed (col. 3 lines 1-4).

As per the arguments with respect to claims 7 and 15, examiner argues that although Ammar may teach feedback, the recitations of the combination of Flanagan et al (5737485) in view of Beierle (U.S. Patent 5309378) in further view of Sonmez et al. (U.S. Patent 5745872) in further view of Ammar meets the claim scope limitations, as shown above. Although this combination may have the step of feedback, the combination does teach the compensation term determined from the input signal, reference signal, and the codebook vector.

Conclusion

10. Any response to this action should be mailed to:

Commissioner of Patents and Trademarks
Washington, D.C. 20231
or faxed to:
(703) 872 9314,
(for informal or draft communications, please label "PROPOSED" or "DRAFT")
Hand-delivered responses should be brought to Crystal Park II, 2121 Crystal Drive, Arlington. VA., Sixth Floor (Receptionist).

11. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Michael Opsasnick, telephone number (703)305-4089, who is available Tuesday-Thursday, 9am-4pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Ms. Doris To, can be reached at (703)305-4827. The facsimile phone number for this group is (703)872-9306.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the Group 2600 receptionist whose telephone number is (703) 305-4750, the 2600 Customer Service telephone number is (703) 306-0377.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

mno
1/27/05

DAVID L. OMETZ
PRIMARY EXAMINER